The Epidemiology of SIDS in TN Before and After the "Back to Sleep Campaign"

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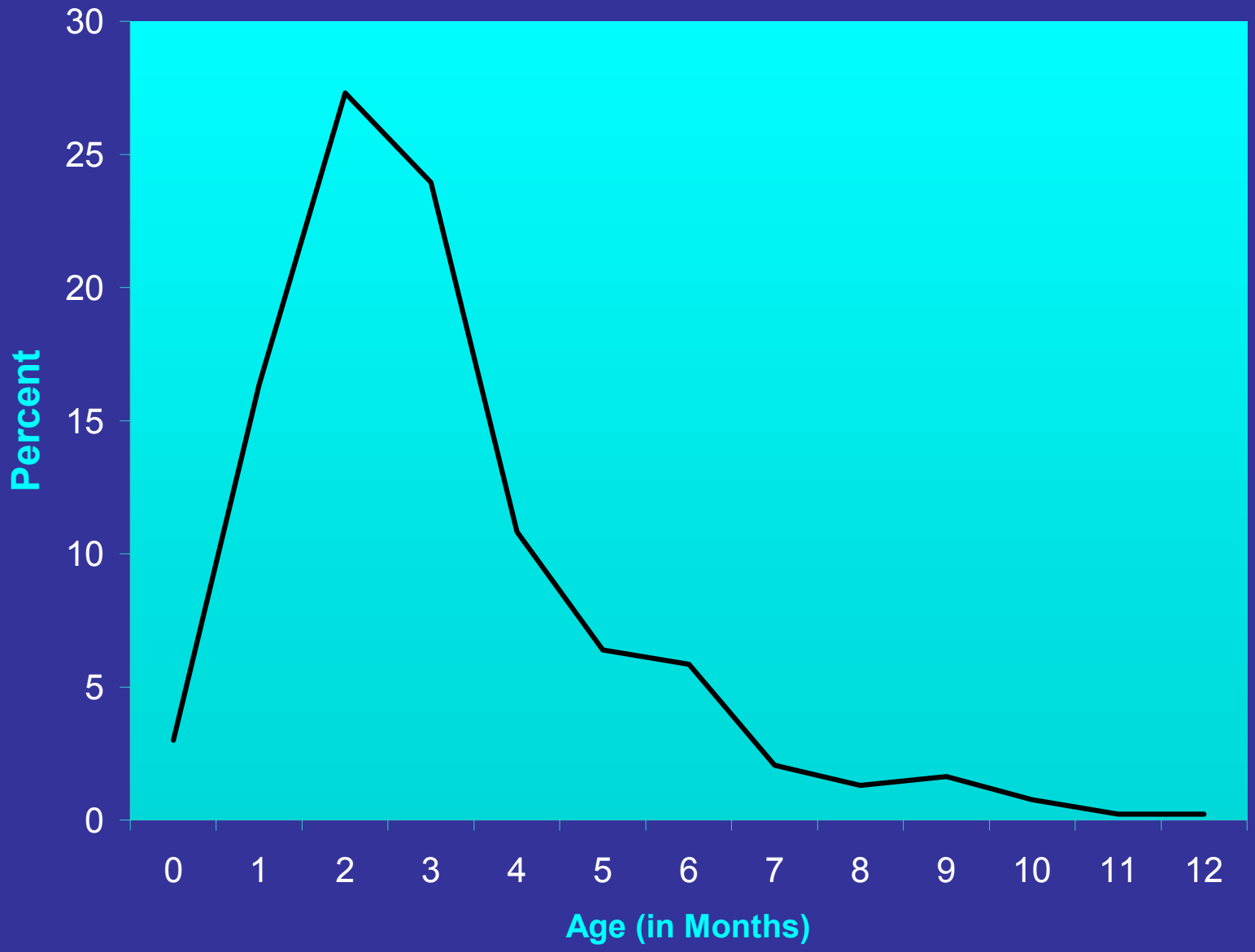
Sudden Infant Death Syndrome (SIDS)

- The sudden death of an infant under 1 year of age, which remains unexplained after a thorough case investigation, including performance of a complete autopsy, examination of the death scene, and review of the clinical history."

–Willinger 1991

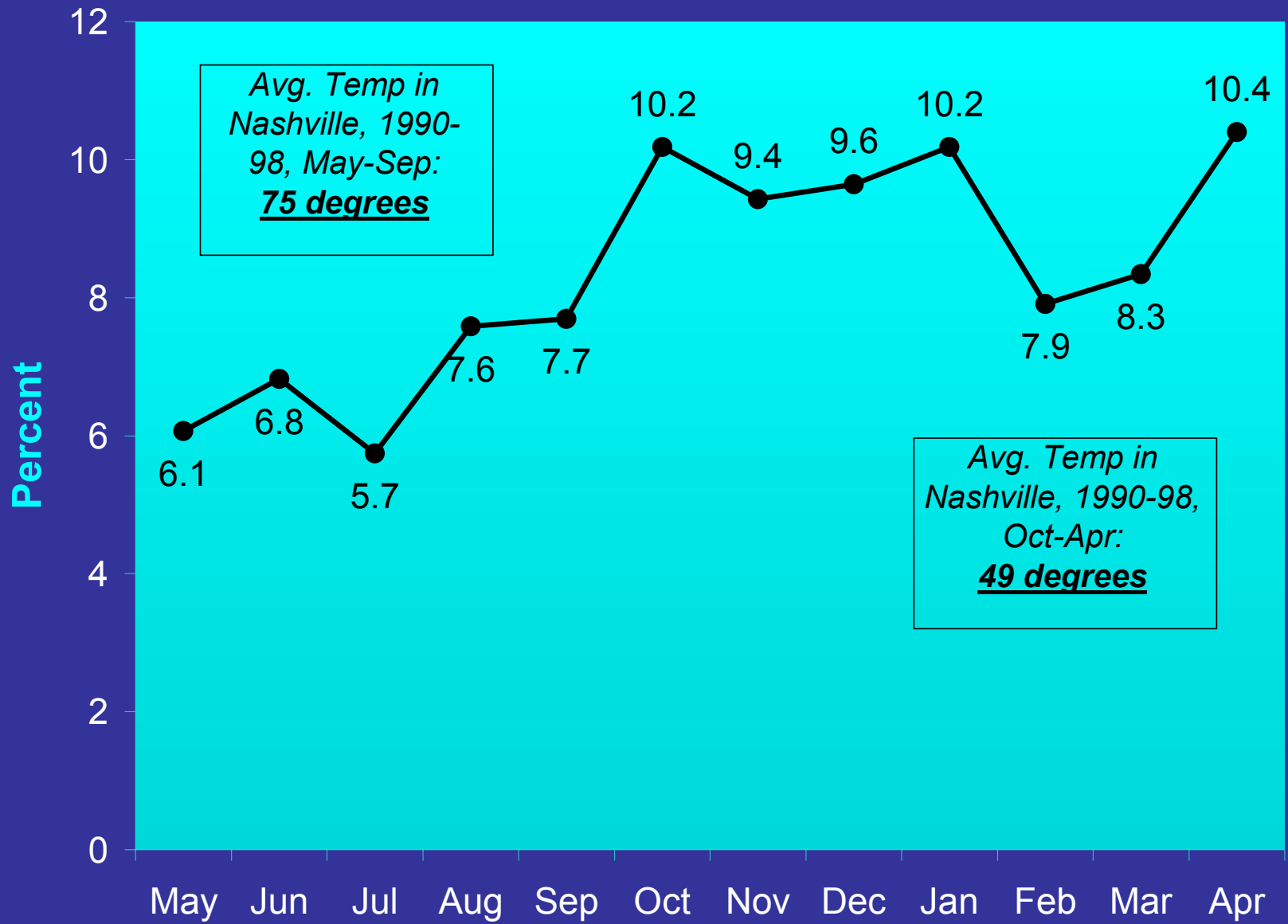
SIDS Deaths by Age of Death
Tennessee, 1990-1998



Proposed Mechanisms

- Decreased arousal/arousal disregulation
  - Wake less frequently to feed
  - Move less in their sleep
  - Sleep longer
- Asphyxia and rebreathing
  - Nasal & intrapulmonary hemorrhages
- Thermal stress/overheating
  - Excessive sweating/excessive bedclothes
  - Increased room temperature
  - Infection with fever
  - Seasonal distribution of deaths

Percentage of SIDS Deaths by Month Tennessee, 1990-1998



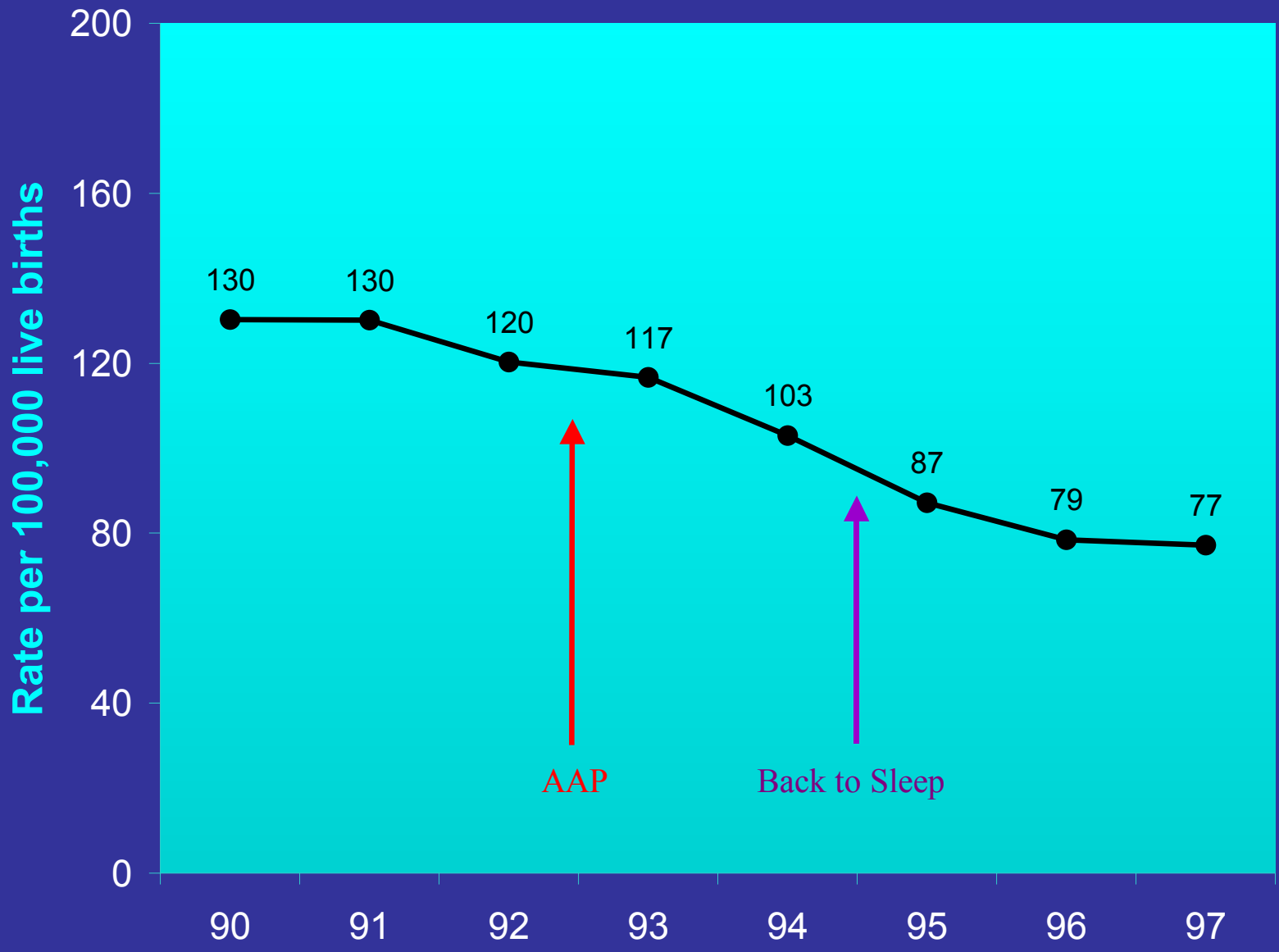
Risk Factors for SIDS

- Prone sleep position
- Low birthweight/pre-term birth
- No/late prenatal care
- Maternal smoking during pregnancy
- Young maternal age
- Single marital status
- Soft bedding
- Co-sleeping (possibly)
- Infections (possibly)

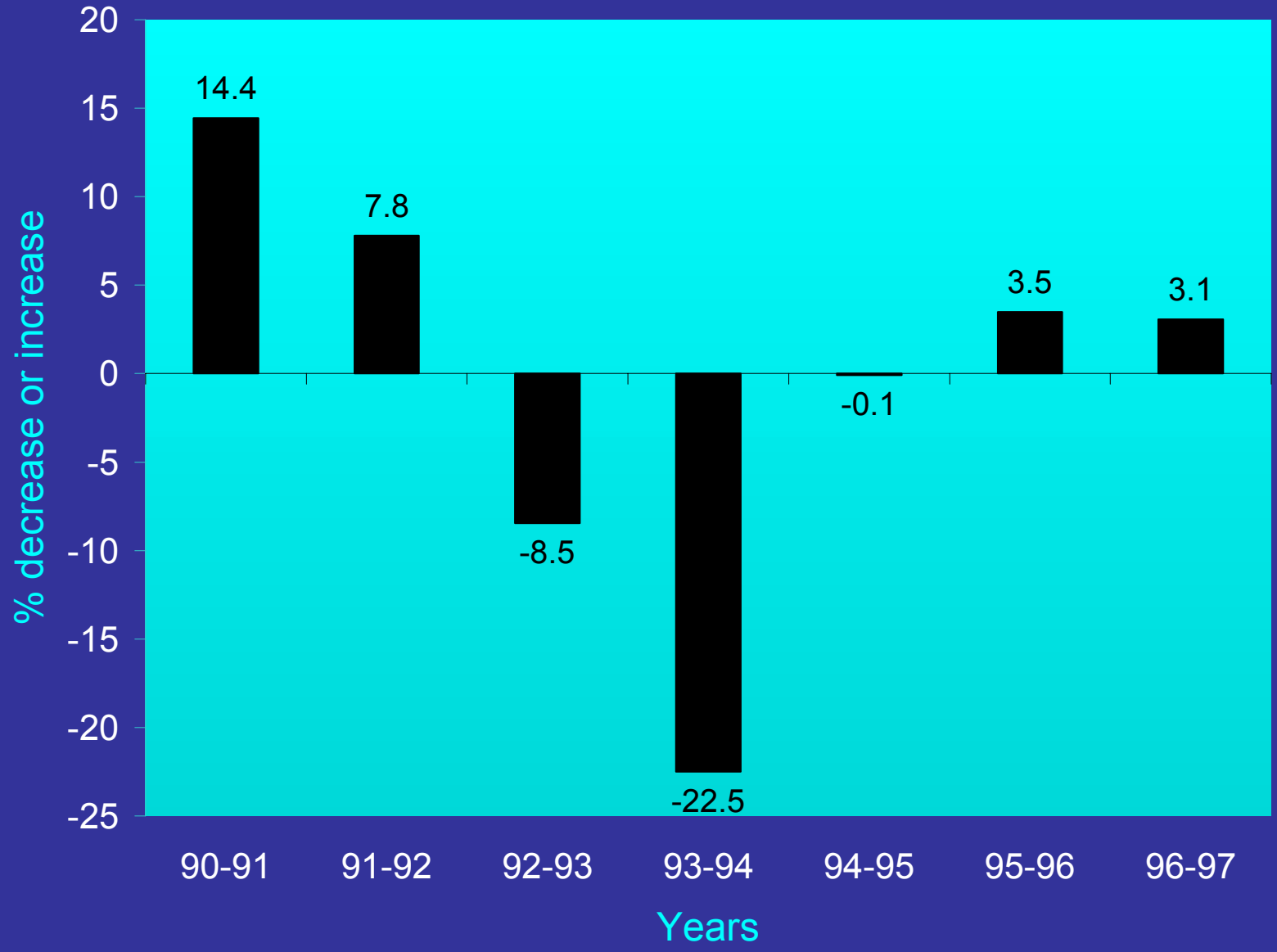
"Back to Sleep"

- 1992 American Academy of Pediatrics (AAP) recommendation
- 1994 "Back to Sleep" national public education campaign initiated
- Prone sleep position in U.S. estimated to have dropped from 62% in 1993 to 20% by 1998
- SIDS incidence has fallen 30-50% between the early 1980s and late 1990s

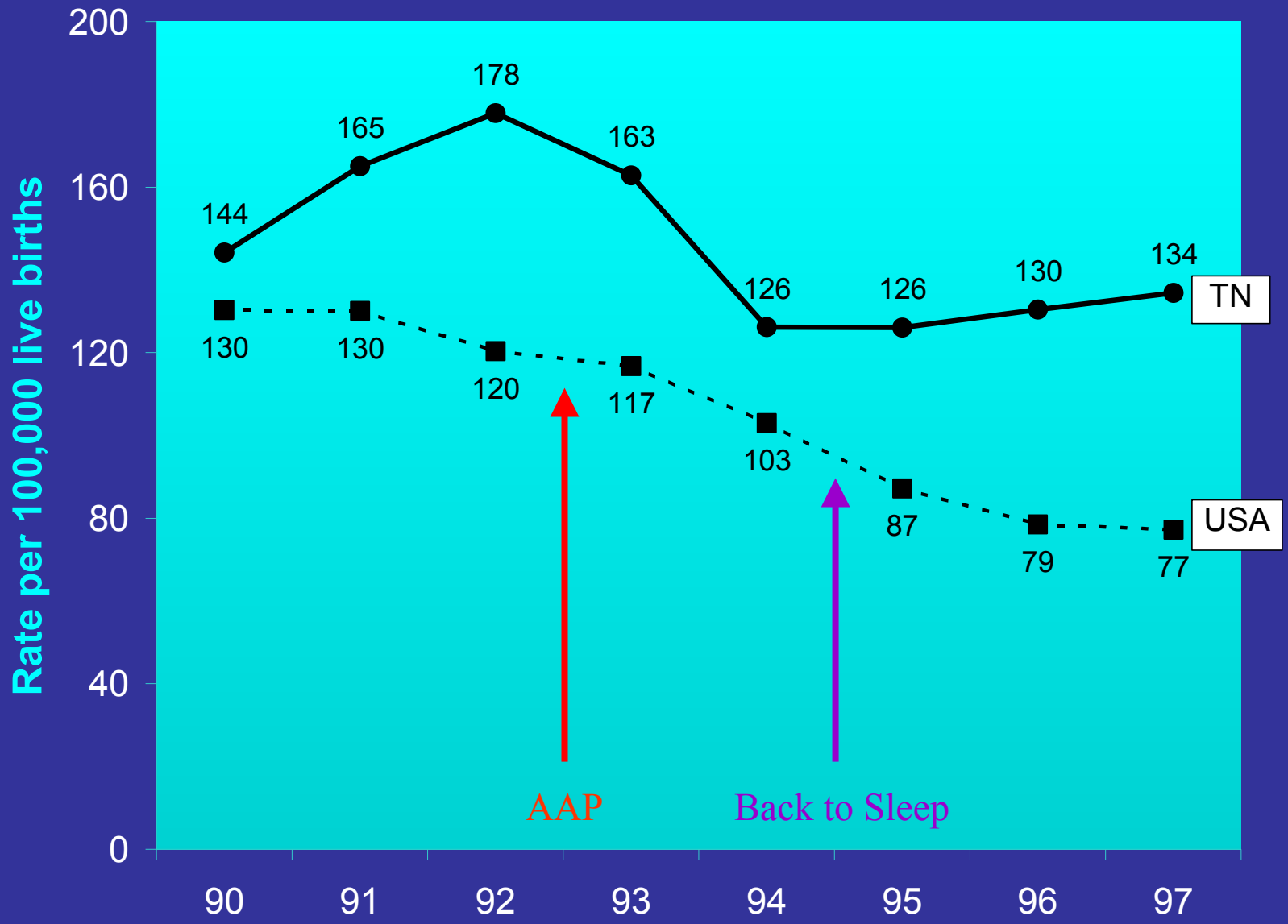
Trend in SIDS Mortality Rate
United States, 1990-1997



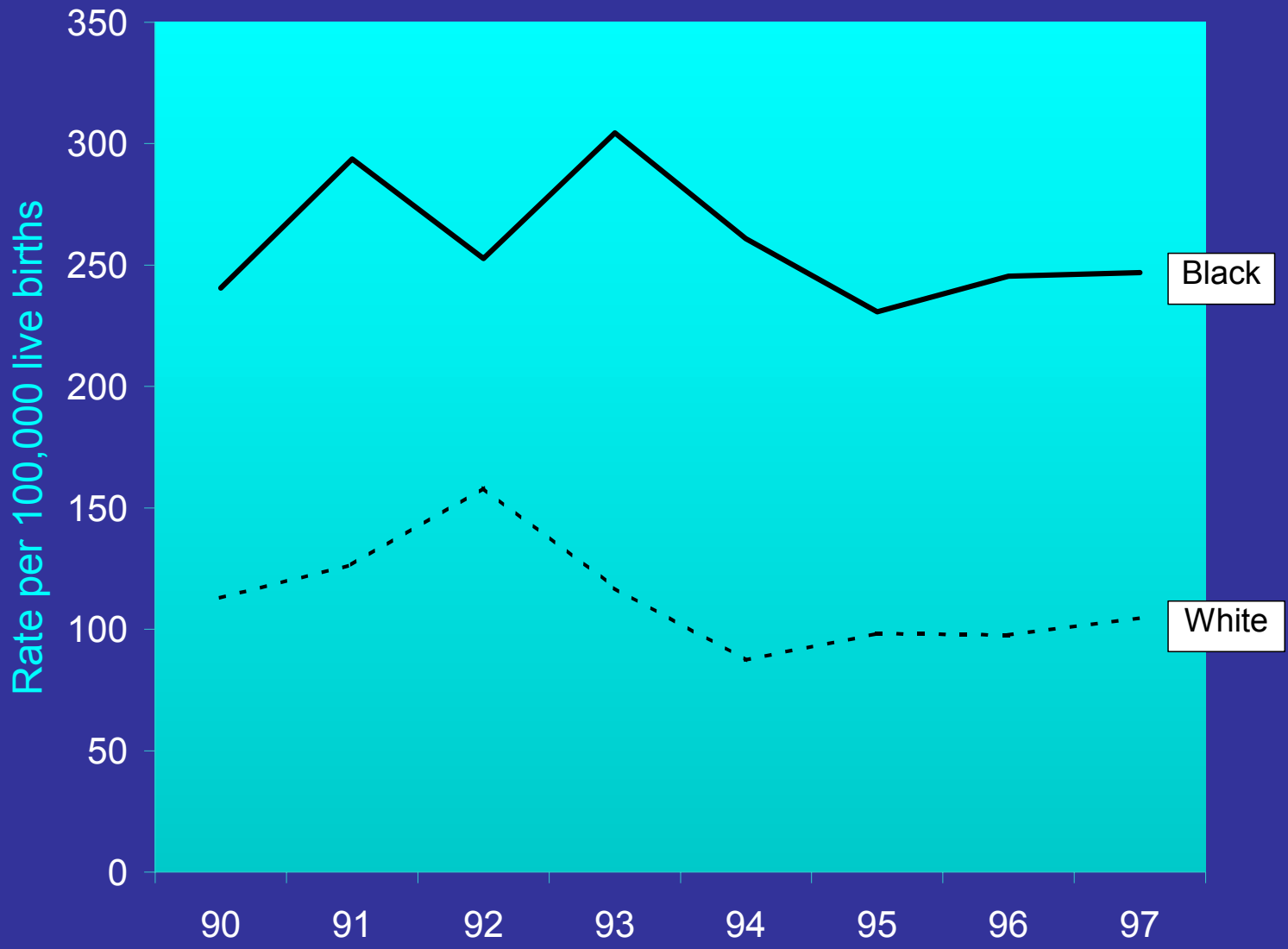
Annual Percent Change in SIDS Mortality Rate Tennessee, 1990-1997



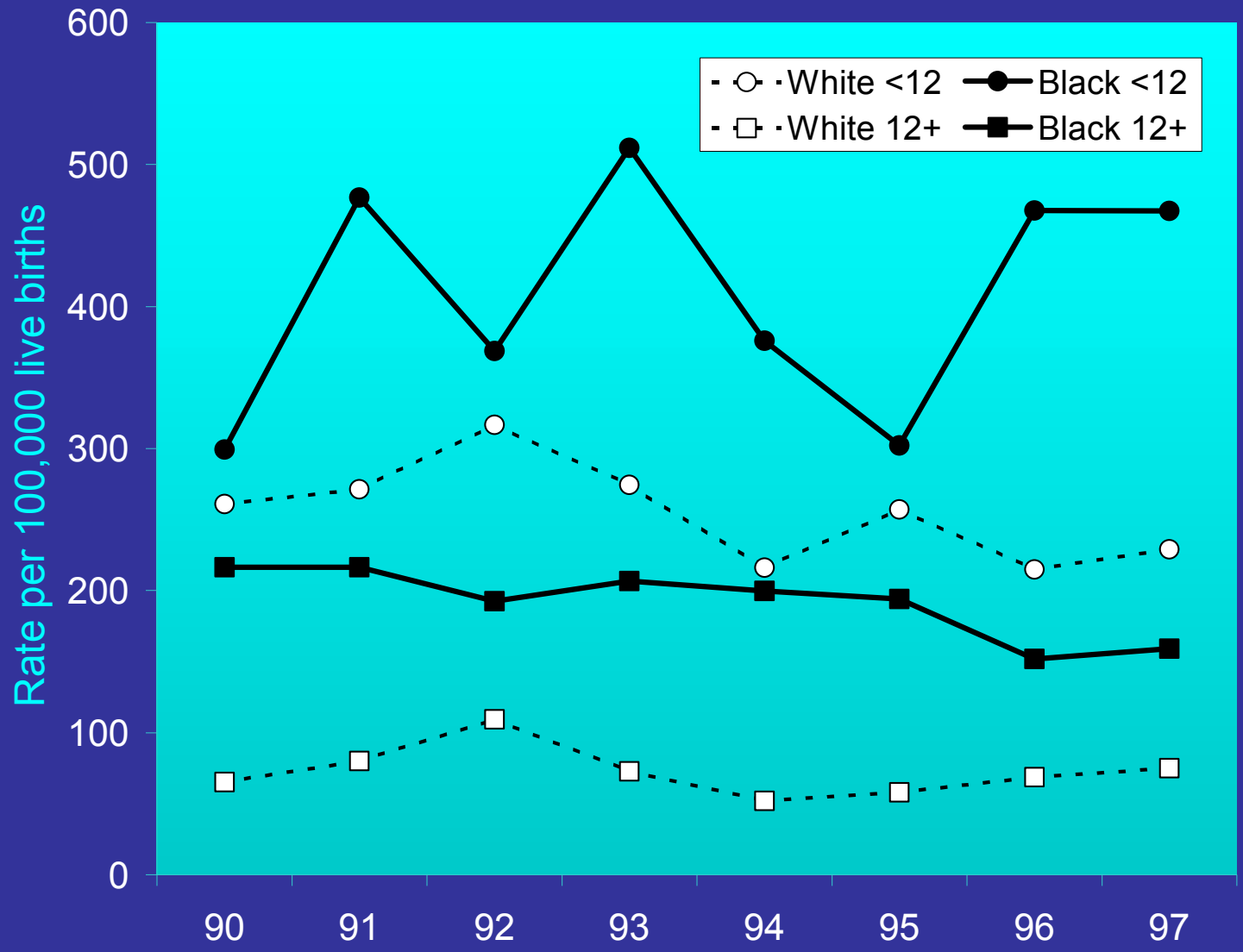
Trend in SIDS Mortality Rate
Tennessee vs. United States, 1990-1997



SIDS Mortality Rate by Race
Tennessee 1990-1997



SIDS Mortality Rate by Race and Maternal Education, Tennessee, 1990-1997



Using Birth Records to Target Prevention Efforts

- Parent/Demographic factors
  - Race, SES, maternal age
- Prenatal Risk Behaviors
  - Late/no prenatal care, tobacco use
- Child Birth Characteristics
  - Low birthweight, preterm

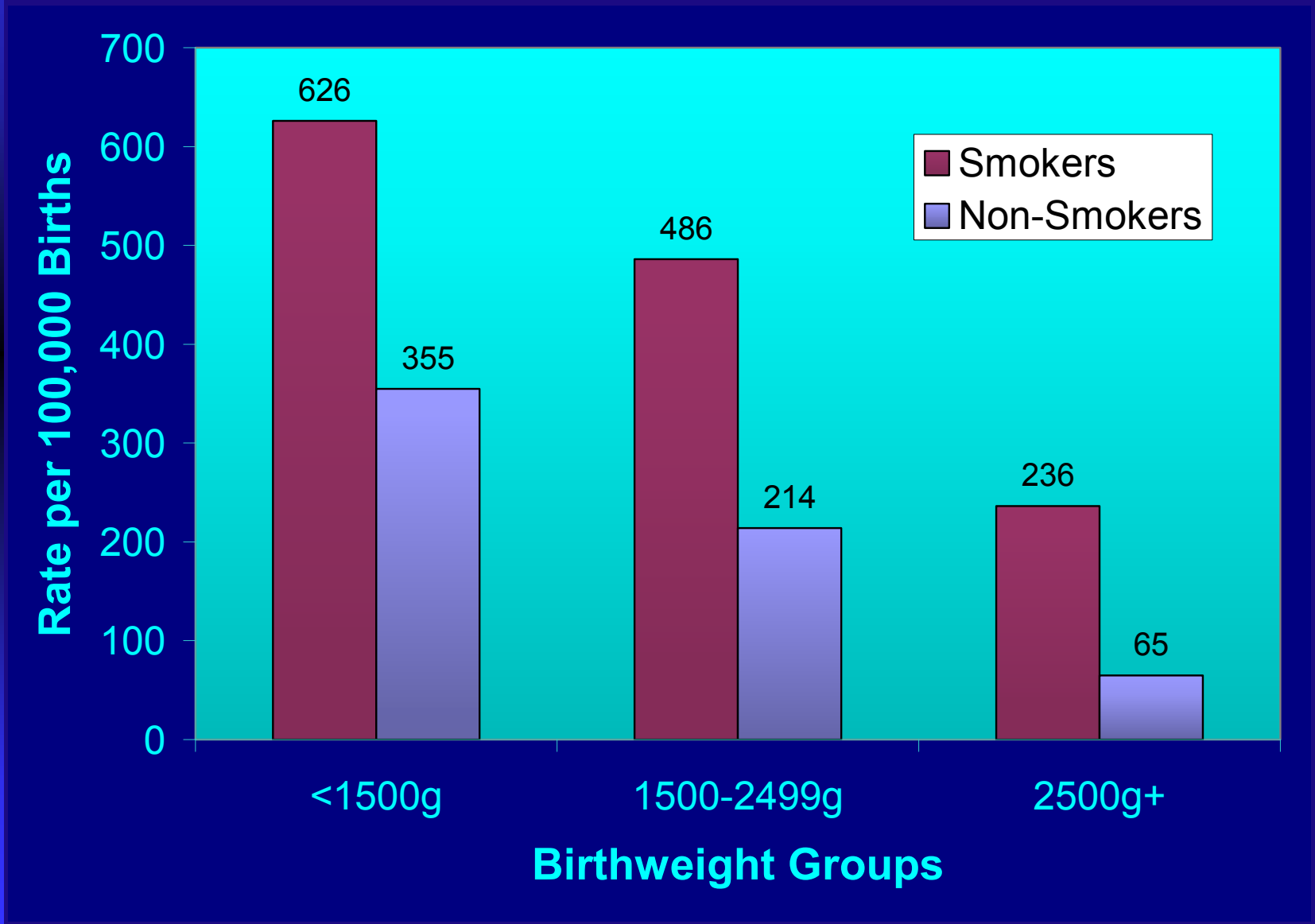
Major Predictors of SIDS in TN Before (1989-91) and After (1995-97) "Back to Sleep", by Race

	Black		White	
Risk Level	1989-91	1995-97	1989-91	1995-97
6x	<1500g	<1500g		
4-5x	Low Apgar	Low Mom Educ. Late/No Care Tobacco Use	<1500g Low Mom Educ. Teenage Mom	Low Dad Educ. Low Mom Educ. Teenage Mom Tobacco Use Alcohol Use
2-3x	Low Mom Educ. Low Dad Educ. Teenage Mom Late/No Care Alcohol Use <2500g Preterm >3 Prior Children Multiple Birth Low Apgar Tobacco Use	Alcohol Use Preterm Multiple Birth Low Apgar	Late/No Care Low Dad Educ. Tobacco Use Alcohol Use Preterm Low Apgar Male	Late/No Care Unmarried <1500g <2500g Preterm Multiple Birth

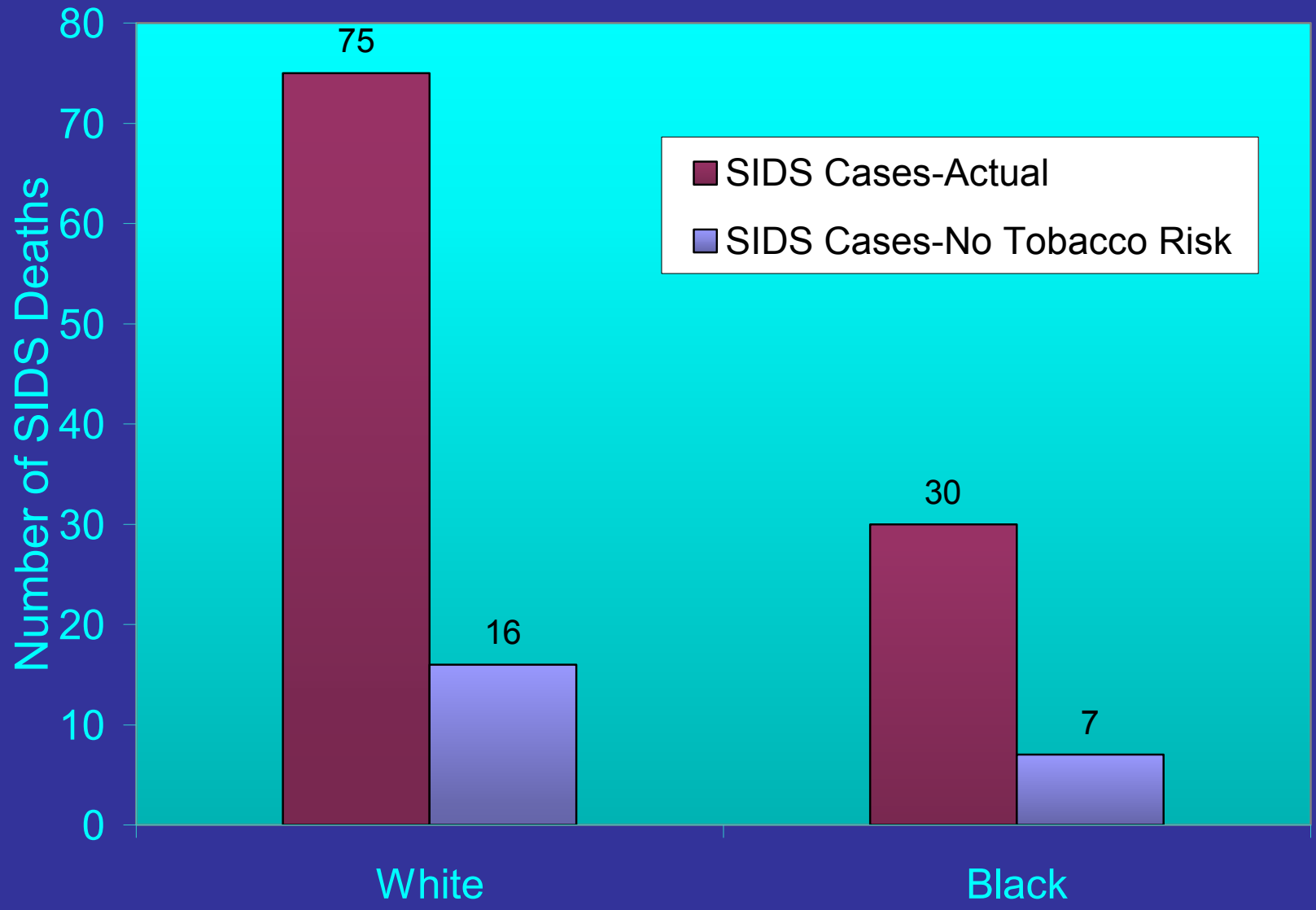
Tobacco Use & SIDS: TN 1995-1997

- Self-reported tobacco use during pregnancy
  - White – 21% (n=33,723)
  - Black – 9% (n=4,362)
  - Hispanic – 5% (n=214)
  - Other – 7% (n=257)
- Crude Odds Ratio
  - Black OR = 4.2 (2.7-6.4)
  - White OR = 4.6 (3.3-6.5)

SIDS Case Fatality Rate by Birthweight and Maternal Tobacco Use, Tennessee 1995-97



Number of SIDS Deaths, Actual & Predicted Based on No Tobacco, Tennessee 1995-1997



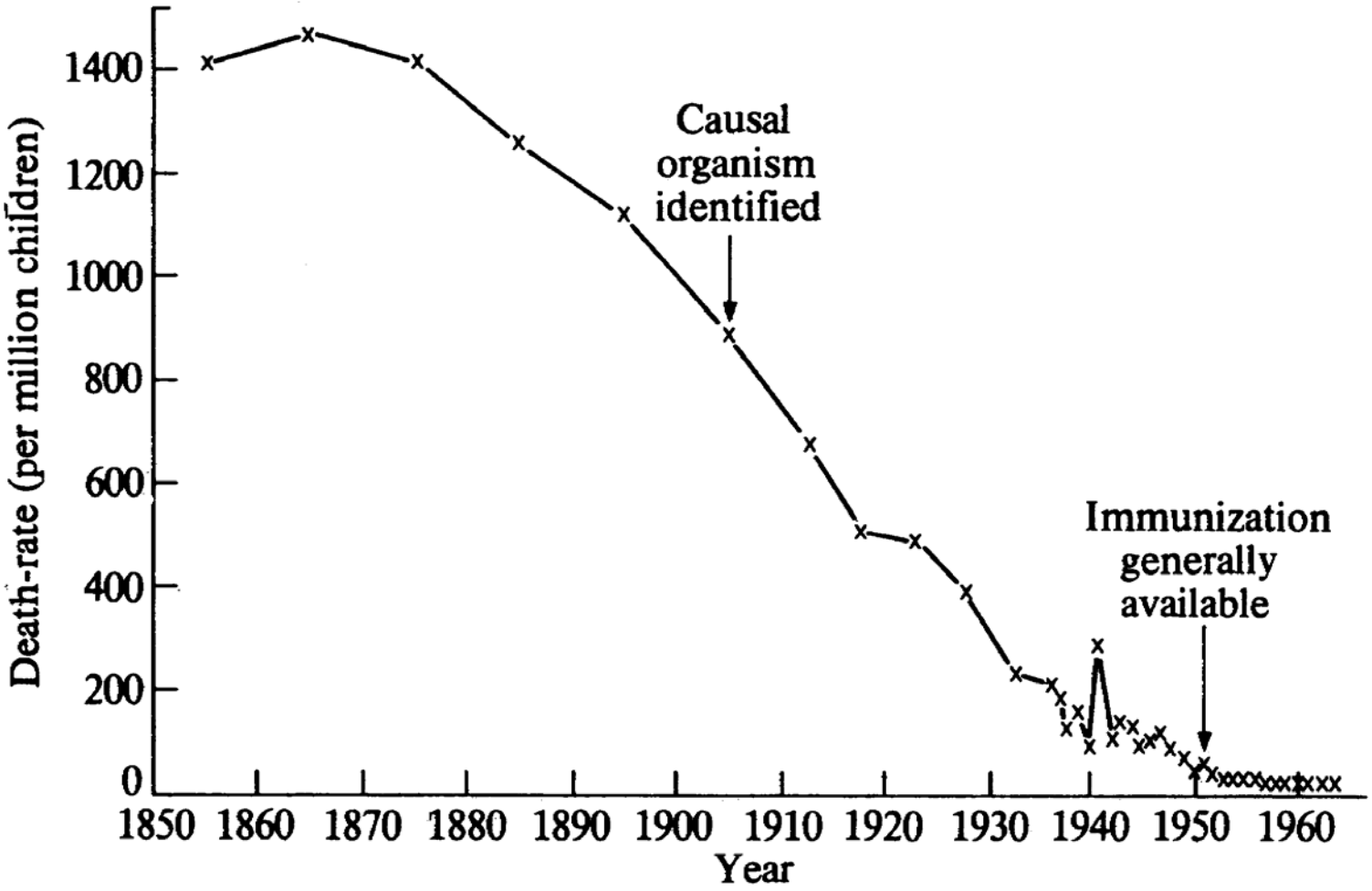


FIGURE 8.12. Whooping cough: death rates of children under 15: England and Wales.

McKeown, T. (1991) The Role of Medicine: Dream, Mirage, or Nemesis.

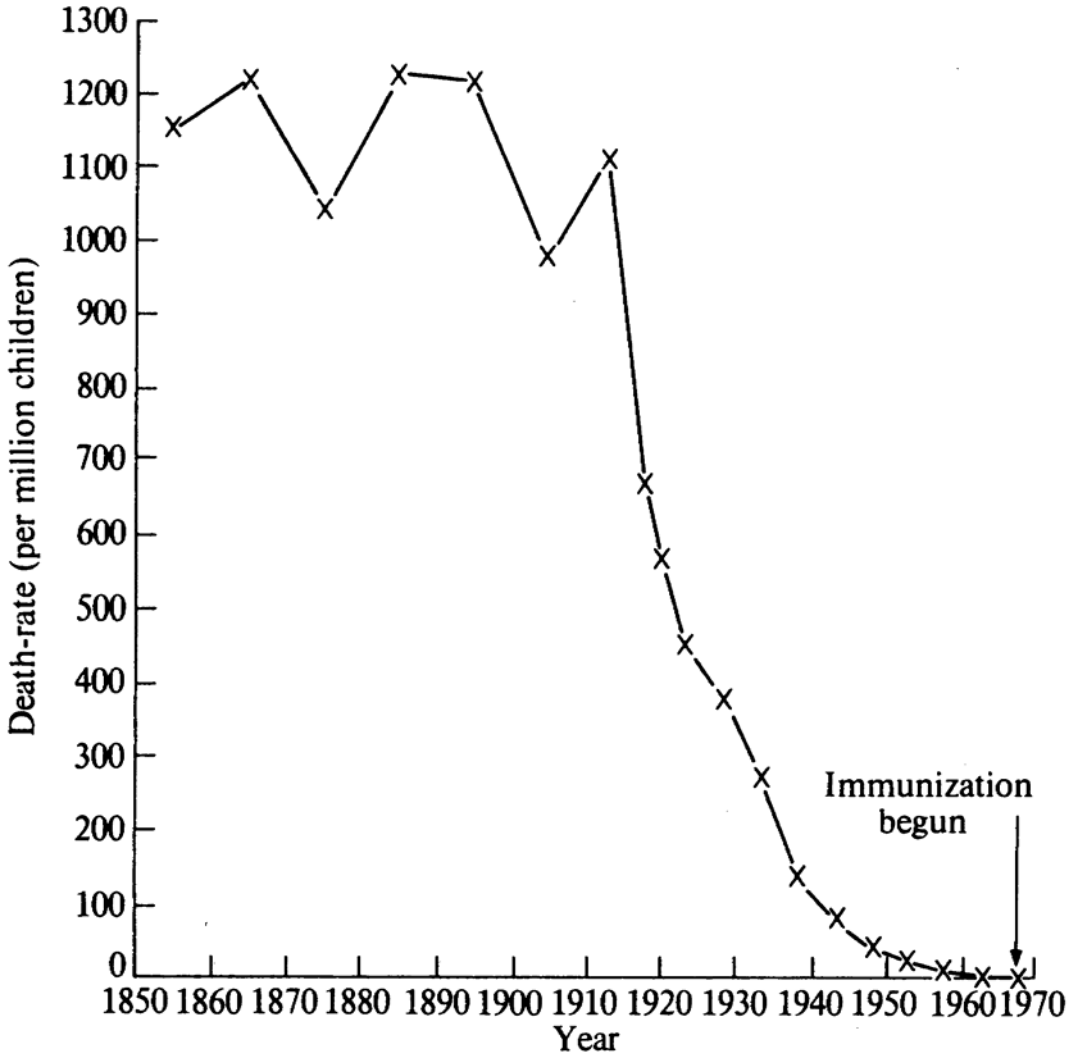


FIGURE 8.14. Measles: death rates of children under 15: England and Wales.

1. Haldane, J. B. S., *Science and Life* (London: Pemberton, 1968), p. 65.

Date of Discovery of Preventive Measures vs. Date of Identification of True Causative/ Preventive Agent

Disease	Discoverer of preventive measure	Year of discovery of preventive measure	Year of discovery agent	Causative or preventive agent	Discoverer of agent
Scurvy	J. Lind	1753	1928	(Ascorbic acid)	A. Szent-Gyorgi
Pelleagra	G. Casal	1755	1924	(Niacin)	J. Goldberger et. al.
Scrotal cancer	P. Pott	1775	1933	Benzo{2}pyrene	J. W. Cook et. al.
Smallpox	E. Jenner	1798	1958	Orthopoxvirus	F. Fenner
Puerperal fever	I. Semmelweis	1847	1879	Streptococcus	L. Pasteur
Cholera	J. Snow	1849	1893	*Vibrio cholerae*	R. Koch
Bladder cancer	L. Rehn	1895	1939	2-Napththylamine	W. C. Hueper et. al.
Yellow fever	W. Reed et al.	1901	1928	Flavivirus	A. Stokes et. al.
Oral cancer	R. Abbe	1915	1974	*N'*-itrosonornicotine	D. Hoffman et. al.

Wynder, E. L. (1993) Invited commentary: Studies in mechanism and prevention American Journal of Epidemiology, 139, 547-549.

ICD-9 vs ICD-10

- More records will have SIDS as an underlying cause because Rule A specifically excludes SIDS from the ill-defined conditions
  - SIDS can be the underlying cause of death, but not the other ill-defined conditions (R00-R94 and R96-R99) if another condition is present
- TDH death data used ICD-10 starting in 1999

Health Statistics & Research on the Web

http://www.state.tn.us/health/statistics/HealthData/data_index.htm

http://www.state.tn.us/health/statistics/AboutHSR/research.htm

http://www.state.tn.us/health/statistics/PdfFiles/SIDS90-98.pdf